Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application. No claims have been amended. Claims 33-40, 45, and 46 have been canceled without prejudice.

1-3. (Canceled)

4. (Original) An apparatus, comprising:

an optical waveguide having a core, a cladding, and an interaction region;

two or more reflectors aligned to facilitate multiple passes of a band of wavelengths within an optical signal through the interaction region, the two or more reflectors including a first reflector and a second reflector;

an acoustic wave exciter affixed to the interaction region; and

light-absorbing material interposed between the first reflector and the second reflector.

5. (Original) The apparatus of claim 4, wherein the acoustic wave exciter includes an acoustic wave propagation member, a signal generator, and an acoustic wave generator.

6. (Original) The apparatus of claim 5, wherein the acoustic wave propagation member comprises an acoustic horn.

7. (Original) The apparatus of claim 5, wherein the acoustic wave generator comprises a transducer.

8. (Original) The apparatus of claim 4, wherein the first reflector comprises a Fiber Bragg Grating with a reflectivity of less than one hundred percent.

9. (Original) The apparatus of claim 4, wherein the first reflector comprises a mirror with a reflectivity of less than one hundred percent.

10. (Original) The apparatus of claim 4, wherein the first reflector comprises a recirculator with a reflectivity of less than one hundred percent.

11. (Original) The apparatus of claim 4, wherein the first reflector comprises a coupler with a reflectivity of less than one hundred percent.

12. (Original) The apparatus of claim 4, wherein the two or more reflectors are aligned to reflect the optical signal bi-directionally through the interaction region.

13. (Original) The apparatus of claim 4, wherein the interaction region has a first portion and a second portion, the length of the first portion is based upon an optical wavelength in the optical signal, frequency of the acoustic wave, and type of the fiber.

14. (Original) The apparatus of claim 4, wherein the optical wave-guide comprises a single mode optical fiber.

15. (Original) The apparatus of claim 4, wherein the apparatus comprises an acoustical-optical tunable bandpass filter.

16. (Original) The apparatus of claim 15, wherein a transmission spectrum of the acoustical-optical tunable bandpass filter is less than 18 Gigahertz.

17. (Original) The apparatus of claim 4, wherein the acoustic wave exciter is tunable to select a center optical wavelength in the optical signal.

18. (Original) The apparatus of claim 4, wherein the two or more reflectors further include a third reflector and a fourth reflector aligned to facilitate multiple passes of the optical signal through the interaction region in a unidirectional manner.

19. (Original) The apparatus of claim 8, further comprising:

an acoustic wave absorber affixed to the interaction region.

20. (Original) The apparatus of claim 4, wherein the light absorbing material includes a fiber Bragg grating aligned to reflect selected wavelengths at an angle out of the optical waveguide.

21. (Original) A method, comprising:

receiving an optical signal;

transmitting an acoustic wave at a first frequency that corresponds to a first optical wavelength; the acoustic wave to cause a band of wavelengths within the optical signal to couple from a first mode to a second mode in an optical waveguide;

absorbing the energy of the optical signal in the first mode;

exposing the band of wavelengths in the second mode to the acoustic wave to cause the optical signal to couple from the second mode to the first mode; and

routing the band of wavelengths through the acoustic wave multiple times.

22. (Original) The method of claim 21, wherein the first optical wavelength is proportional to a second frequency applied by a signal generator to an acoustic wave generator.

23. (Original) The method of claim 21, wherein a percentage of the first optical wavelength coupled from the first mode to the second mode corresponds to a signal strength of the acoustic wave at the first frequency.

24. (Original) The method of claim 21, wherein the first mode comprises a core mode.

25. (Original) The method of claim 21, wherein the first mode comprises a cladding mode.

26. (Original) The method of claim 21, wherein the first mode comprises a polarization mode.

27. (Original) The method of claim 21, wherein coupling comprises transitioning energy from a first spatial propagation mode to a second spatial propagation mode.

28. (Original) The method of claim 21, wherein multiple times comprises three or more passes.

29. (Original) An optical monitoring device, comprising:

an optical signal input;

an acoustic wave exciter;

an optical waveguide having a core, a cladding, and an interaction region;

two or more reflectors aligned to facilitate multiple passes of a band of wavelengths within an optical signal through the interaction region, the two or more reflectors including a first reflector and a second reflector; and

light-absorbing material interposed between the first reflector and the second reflector.

30. (Original) The apparatus of claim 29, wherein the optical monitoring device comprises an optical power monitor.

31. (Original) The apparatus of claim 29, wherein the optical monitoring device comprises a spectral analyzer.

32. (Original) The apparatus of claim 29, wherein the optical waveguide further comprises a jacket surrounding the core and the cladding and the interaction region comprises a section of the optical waveguide where the jacket is removed.

33-40. (Canceled)

41-42. (Canceled)

43. (Original) An apparatus, comprising:

means for receiving an optical signal;

means for transmitting an acoustic wave at a first frequency that corresponds to a first optical wavelength; the acoustic wave to cause the optical signal to couple from a first mode to a second mode in an optical waveguide;

means for absorbing the energy of the optical signal in the first mode;

means for exposing the optical signal to the acoustic wave to cause the optical signal to couple from the second mode to the first mode; and

means for routing the optical signal through the acoustic wave multiple times.

44. (Original) The apparatus of claim 43, wherein the first mode comprises a core mode.

45-46. (Canceled)